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RR RUEHWEB

DE RUEHMN #0401/01 1941245
ZNR UUUUU ZZH
R 131245Z JUL 09
FM AMEMBASSY MONTEVIDEO
TO RUEHC/SECSTATE WASHDC 9195
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UNCLAS MONTEVIDEO 000401

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SUBJECT: URUGUAY'S POTENTIAL AS A RENEWABLE ENERGY LEADER IN THE
HEMISPHERE

11. (U) This telegram is sensitive but unclassified, and not for
Internet distribution.

Summary

12. (U) Uruguay has the potential to become an alternative
energy-based economy if it continues its current effort and improves
the policy environment and needed infrastructure. In its quest for
energy security, the GOU is pursuing a three-pronged strategy that
parallels current U.S. energy policy: breaking Uruguay's dependence
on oil; producing more energy at home; and promoting energy
efficiency. Several projects -- both private and public sector
driven -- in the areas of biofuels, bio-mass and wind generation are
bringing the country closer to being able to capitalize on its
potential. By the end of 2009, Uruguay will generate six percent of
its electrical power from non-traditional renewable energy (e.g.
biomass and wind). Embassy Montevideo is actively pursuing a series
of biofuels and alternative energy-related initiatives with the GOU.
End Summary.

Uruguay: Energy Overview

13. (U) From 2003 to 2005, the need for Uruguay to expand its
national energy portfolio was brought into sharp focus by the
country's worst-ever energy crisis. Rising demand forced Uruguay to
supplement its normal electricity supply with greater purchases from
its neighbors Argentina and Brazil. Under normal conditions, 70 per
cent of the country's annual electrical energy requirement of 2500
megawatts (MW) is generated by large scale domestic hydroelectric
power plants, with the remaining 30 per cent being met mainly by oil
imports (together with a small amount of gas and imported
electricity). As recent droughts have demonstrated, however, this
optimum 70 to 30 ratio changes dramatically in times of low
rainfall. Uruguay's lack of domestic oil leaves it completely
dependent on imported oil supplies and vulnerable to price increases
(the country's petroleum imports exceeded USD 1 billion in 2007 and
almost doubled in 2008). Consequently, a driving force behind the
diversification of Uruguay's energy sector is a desire for energy
security and independence.

14. (U) The GOU is convinced that renewable energy could play a
central role in solving Uruguay's energy concerns. Upon assuming
office in 2005, President Tabare Vazquez announced that his
government would aim to generate 500 megawatts, or 20 per cent of
the country's electricity, from alternative sources by 2015. In
support of this target, the GOU launched a sustainable energy policy
designed to support the growth of the renewable energy sector.
Under this program, the government offered to grant tax exemptions
and financial benefits of 10 to 20 years to private investors who
produce renewable energy. In 2007, the state utility company UTE

issued tenders for 60 MW worth of wind, biomass, and small-scale hydroelectric power plants projects (originally intended to include 20 MW from each source). So far, however, only 36 megawatts have been awarded to bidders, none of which have been for hydroelectric power. UTE officials told emboffs that economic conditions have not favored small-scale hydroelectric projects and they expect to award more wind and biomass contracts instead.

15. (U) A central part of the GOU's efforts to increase the presence of renewable energy in the overall energy matrix is the use of biofuels in the transport sector. Of Uruguay's 2007 total energy demand, transportation accounted for 33 percent. Diesel consumption for vehicles in 2008 was about 880 million liters, while gasoline was 380 million liters. The GOU aims to partially replace petroleum in cars and public transport with biofuels over the next five years.

Hydroelectric Power

16. (U) Uruguay has four hydroelectric plants in operation; three on the Rio Negro and one, the Salto Grand Dam, that is shared with Argentina on the Rio Uruguay. The stations on the Rio Negro date from World War II and are in need of upgrades. Additionally, UTE has plans for a new 80 MW plant near Montevideo, with equipment and engineering support coming from Finland.

17. (U) Most of Uruguay's rivers are already dammed and land costs in suitable areas are prohibitively high. Sources at the Ministry of Energy speculate, however, that a number of local rice producing companies are already ideally situated, but are not yet aware that installing hydroelectric power could be a viable option.

Biomass

18. The burning and/or gasification of renewable biomass is presently the largest non-traditional (i.e. not including hydroelectric power) renewable source of electricity in Uruguay. As such, energy produced from biomass largely accounts for the GOU claim that Uruguay has the highest proportion (6 percent) of electricity from non-traditional renewable sources in the western hemisphere. At present, although many companies use biomass to produce heat energy for their own operations, all biomass-produced electricity moving to Uruguay's grid comes from one source: Finnish company Botnia's huge paper mill located in the west of the country on the border with Argentina. The plant produces electricity from vapor produced by the burning of 'black liquor,' surplus residue from the production of pulp. The plant produces 120MW annually; half is used to sustain its own operation, with the other half sent to the grid and sold to UTE.

19. (U) The production of energy from biomass is set to grow. U.S. forestry company Weyerhaeuser, which already uses biomass (waste from its forest product operations) to fulfill its heat and steam requirements, is finalizing construction on a 10MW turbine electricity plant and has recently signed a contract with UTE to provide 4 MW of electricity to the national grid. ALUR, a subsidiary of the state oil company ANCAP, is constructing a biomass generation facility to power its sugarcane refinery and bioethanol plant. The plant will burn sugarcane bagasse, rice husks and sweet sorghum residuals. ALUR has also signed a contract to sell surplus MW to UTE. Additionally, at least three other local forestry (Bioner and Fenirol) and rice producers (Galofer) have concrete plans to produce electricity for UTE. Between them they could generate up to 28 MW for the national grid.

Biofuels: Ethanol and Biodiesel

110. (U) Uruguay produces, or has plans to produce, both ethanol (generally produced from sugars and starches in plants), and biodiesel (generally produced from oily biomass such as seed and animal fats) and has made an important regulatory commitment to

mandate the use of biofuels in the country. In November 2007, the GOU passed a law regulating their production, commercialization, and utilization. As a result, Uruguay has a legislatively mandated target of a) a five percent ethanol/gasoline blend by 2015 and b) a two percent biodiesel/ diesel blend by 2010 rising to five percent by 2015.

¶11. (U) Ethanol: The state-owned petroleum company ANCAP already produces some 1.5 million liters of industrial-use ethanol per year through its alcohol subsidiary ALUR, and is currently installing equipment to produce ethanol for use in vehicles. In 2006 ALUR took over the Bella Union Sugar Company's sugar plantations and refinery and now aims to add value to its operations by producing bioethanol and generating electricity with biomass. Using molasses as a feedstock, ALUR expects to meet and even surpass the five percent blending target by 2010. Final production is well underway on the site's alcohol distillery, and production is set to begin by the end of 2009.

¶12. (U) In addition to soy, sunflower and other oily grains, biofuels proponents in Uruguay consider sweet sorghum an excellent feedstock. Sweet sorghum contains an exceptionally high amount of sugar, and yields approximately the same amount of ethanol per bushel as corn, but is not vulnerable to the charge of displacing food supplies. The plant seems to fare particularly well in Uruguay, and ANCAP, Weyerhaeuser and a French company AKOU are all independently engaged in testing with a view to developing sweet sorghum pilot projects. Uruguay's National Agricultural Research Institute (INIA in Spanish) has conducted its own studies and continues to work with researchers and ANCAP to study the prospects for sweet sorghum as a fuel crop. ANCAP and INIA have been engaged with researchers at Texas A&M, a leader in sweet sorghum, since visiting the University in 2007 on an Embassy-sponsored program. AKOU's endeavors with sweet sorghum seem particularly advanced. While production has not yet begun, the company has plans to expand its 550 hectare plantation to 8- 10,000 hectares over the next few years. The company has secured permission to construct an ethanol plant and, if production is successful, hopes to develop an export market.

¶13. (U) In addition to the apparent potential offered by sweet sorghum, Uruguay is well-positioned to pursue the longer term trend towards cellulosic ethanol. This process utilizes the structural

material that comprises much of the mass of plants and has the advantage of being supported by a relative abundance of source material when compared with sources such as corn, sugar cane or sorghum. Of particular interest in Uruguay are the possibilities offered by the processing of wood chips and thinnings, sawdust and other such residuals from its rapidly growing forestry industry. Although cellulosic ethanol is generally more complicated (and therefore costly) to produce, it nevertheless seems to be edging ever closer to being viable. Both ANCAP and Weyerhaeuser have indicated their interest in exploring cellulosic technologies in Uruguay.

¶14. (U) Biodiesel: Until last year, Uruguay had a modest but thriving biodiesel sector concentrated at the level of local farmers and small private operators who produced biodiesel as a by-product of animal feed production. The biodiesel was then used to run local farm machinery and, in one case, a local bus company. A recent rise in the price of the two main feedstocks (animal tallow and soybean), however, has meant that placing the by-products directly on the market offered greater economic gain than converting them into fuel. Consequently, the majority of these plants have presently ceased biofuel production.

¶15. (SBU) ANCAP is ramping up the largest biodiesel project in Uruguay, working with the edible vegetable oil producer COUSA. COUSA operates the country's largest pressing plant and edible oil refinery on the outskirts of Montevideo. Couse and ANCAP are finalizing the details to have Couse source raw material and expand pressing operations to provide grain oil that ANCAP will use to meet upcoming mandatory blending requirements for bio-diesel. ANCAP will install two biodiesel refineries at the location of its central refinery in Montevideo. These plants will enable ANCAP to produce around 4-5 million liters by the end of 2009. Although ANCAP is unlikely to meet the mandated 2 percent blend by the end of the

year, production is expected to step up to around 16-17 million liters in 2010, enabling it to comply with the GOU target. According to Cousa, the project's ideal feedstock is around 75 percent sunflower seed to 25 percent soy, which would be purchased on the open market. ANCAP is working with local cooperatives to provide both technical support and guarantees that they will purchase the crops at market prices.

Wind Power

¶16. (U) The potential to harness wind energy in Uruguay is significant. The National Directorate of Energy is currently creating a wind-map of the country to identify the most advantageous sites. Currently, there are two functioning projects: a private wind farm in Rocha (owned by Argentine investors) and the UTE-owned "Sierra de los Caracoles" wind farm in Maldonado. Both operations generate approximately 10 MW per year. While economic constraints mean that the Rocha farm is unlikely to expand in the near future, UTE hopes to be generating 300MW of wind-power by 2015 (ten percent of Uruguay's annual requirements).

¶17. (SBU) The response to UTE's call for wind power tenders has been enthusiastic and ongoing (UTE and the Ministry of Energy are currently interviewing interested parties, including U.S. firms), but UTE has not yet contracted additional projects. A key consideration for potential investors will be to obtain an "iron clad" purchase contract from UTE, which has a monopoly on the purchase of energy as well as the right to set conditions, price and location. One additional, primarily technical challenge arises from the fact that Uruguay's electricity grid is designed to be fed only from a few central sources. Consequently, potential investors have to design and budget for the necessary bridging technology.

¶18. (U) The GOU's 2005 plan also included incentives for buildings and homes to use mini-wind parks to create self-sustained energy. Another initiative is mini-turbines used in family homes. Although these remain long-term aims, Ramon Mendez, the National Director of Energy, has stated that grid energy consumption could be reduced by almost 30 percent through this method. Additionally, the mini-turbines could potentially feed the grid and the owners could receive a discount in their energy bills.

Solar Power

¶19. (U) The use of solar power is only at an incipient stage in Uruguay. Uruguay's largest single installation is 150 m2 and the country currently has only 1.000 m2 of solar panels or less than 0.3 m2 of coverage per thousand inhabitants. This compares to Brazil with 17 m2 of solar paneling per thousand inhabitants, Germany with

104m2 and Israel with 770 m2. Uruguay's existing solar power technology is primarily thermal (i.e., based on solar collecting devices that generate energy directly heating water, as opposed to the costlier photovoltaic technology, which uses sunlight to produce electricity). For the last two decades, most solar power has been employed by a limited cadre of small business and homeowners using thermal solar devices to meet their water heating needs.

¶20. (U) The potential for solar power in Uruguay is encouraging. Uruguay receives an average of 1700 kw/m2 of sunlight a year, which puts it on par with Mediterranean countries and makes solar energy a viable option. There may also soon be legislative support for solar power: the Senate recently passed a 'Promotion of Solar Technology' law that would require every newly constructed health center, hotel and sports club with more than 20 percent of their energy expenditure devoted to heating water to install solar collectors. Additionally, many state institutions are working together to support solar initiatives. "Mesa Solar" (Solar Table) is a group of engineering, architecture, local government and business institutions who communicate on topics connected to thermal solar energy. Also, the public university teaches a module on solar energy as part of its "Technology and Renewable Energy" and Architecture courses.

¶21. (U) The GOU is also interested in exploring photovoltaic power, and by 2015 aims to have established two pilot photovoltaic farms at a rural location isolated from the main grid. UTE has already installed a few photovoltaic panels since 1992. In 2004, they embarked on a plan to install 1000 50 watts/peak (wp) systems. Roughly 600 of these have been successfully installed in rural schools, police stations and ranches with the rest slated for installation by the end of 2009. The vast majority of those already installed are operating well. The public university currently teaches a module on Photovoltaic energy as part of its "Technology and Renewable Energy Course."

U.S.-Uruguay Energy Partnerships

¶22. (U) In September 2008 Uruguay signed an Alternative Energy and Energy Efficiency MOU with the U.S. In the months leading up to the signing and since, Embassy Montevideo has pursued a series of biofuels and alternative energy-related initiatives with the GOU.

-- October 2007 - the U.S. Department of Energy supported a visit by GOU officials and experts at ANCAP, Uruguay's state-owned petroleum company, to visit and establish connections with North Carolina State University (NCSU) on biofuels. Following the visit, Uruguayan students have studied and done research at NCSU and the Embassy brought a renowned NSCU biofuels expert to visit Uruguay. The Embassy continues to facilitate interaction between NCSU and ANCAP.

-- September 2008 - Embassy Montevideo supported a seminar that brought a U.S. expert in next-generation cellulosic biofuels to Uruguay. He met with Minister of Industry and Energy Daniel Martinez, ANCAP and Ministry of Energy engineers, as well as private companies involved in biofuels and academic researchers.

-- October 2008 - Embassy Montevideo arranged for the University of Georgia, with the assistance of Weyerhaeuser, to develop academic exchanges and research opportunities with the University of Montevideo in areas such as forestry and biofuels, among others.

-- May 2009 - Embassy Montevideo organized a round table discussion with Ms. Carey Bylin, Natural Gas STAR Program, Oil & Gas, EPA, and local government and private institutions. The meeting focused on methane emissions from oil and gas, landfills, coal mining and agricultural waste. In follow up to the meeting, the Embassy and Ms. Bylin discussed with the Director of Energy the possibility of Uruguay joining the EPA's Methane to Markets initiative.

-- June 2009 - ANCAP formally thanked the Embassy for assistance provided within the MOU by the Commercial Section to identify equipment suppliers as well as information on standards for ethanol in support of the company's program to meet mandatory ethanol blending requirements of 2% by end of 2009 and 5% by 2014.

-- July 2009 - Embassy Montevideo will bring a U.S. expert in land management and use of carbon credits to fund biofuels projects to Uruguay for a two-day visit. The Stanford University professor will meet with Ministry of Energy officials, ANCAP representatives, NGOs and private companies involved in biofuels, and academic researchers.

-- In February, emboffs and officials from the Uruguayan National Directorate of Energy and Nuclear Technology (DNENT) met to discuss

the current state of Uruguay's energy sector and potential next steps within the framework of the MOU. DNENT agreed to develop a draft plan of action to implement the MOU's provisions to (1) promote exchanges, research and development and (2) establish a bi-national working group on renewable energy and energy efficiency.

DNENT stressed GOU support of public-private cooperation and investment in the development of the biomass sector. An OPIC-partnered project on biofuels may be a possibility. Another area identified for future collaboration is technical assistance and policy development on integration of privately generated power into the national power grid.

Comment

¶23. (SBU) The GOU's commitment to renewable energy is strong, but limited by its overall technical capacity. Uruguay offers a great deal of potential in the field and the GOU appears prepared to support long-term targets in order to realize some of this potential. Steps thus far have been relatively small but steady. As energy security continues as an important issue and Uruguay's electricity needs grow by 50-60 MW a year, those steps will need to increase in size to keep pace with demand. On biofuels in particular, Uruguay has the potential to produce much more than the five per cent of total motor vehicle fuels required by law. With forward-leaning public policy it could adapt into a biofuels-based economy based on today's technology and likely advances in the future. Potential export markets look tougher, as it will be difficult to compete with much larger Argentine operations. Private investment will prove essential in these endeavors, and the GOU will need to consider carefully the roles of its state-owned monopolies, UTE and ANCAP. Whereas the private production of electricity is economically viable, its purchase and distribution is controlled by the state-owned monopoly UTE, which can set its own price. Meanwhile, only ANCAP can import, refine and blend petroleum products, making it the 800 pound gorilla on decisions related to biofuels in Uruguay. END COMMENT.